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FILE 'CAPLUS' ENTERED AT 08:45:11 ON 15 JUN 2006
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FILE COVERS 1907 - 15 Jun 2006 VOL 144 ISS 25
FILE LAST UPDATED: 14 Jun 2006 (20060614/ED)

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<http://www.cas.org/infopolicy.html>

=> s vegetable oil
84947 VEGETABLE
27622 VEGETABLES
98031 VEGETABLE
(VEGETABLE OR VEGETABLES)
737644 OIL
354316 OILS
833023 OIL
(OIL OR OILS)
L1 20421 VEGETABLE OIL
(VEGETABLE (W) OIL)

```
=> s 11 or palm oil  
      16380 PALM  
      1225 PALMS  
      16817 PALM  
                  (PALM OR PALMS)  
737644 OIL  
354316 OILS  
833023 OIL  
                  (OIL OR OILS)  
9105 PALM OIL  
                  (PALM(W)OIL)
```

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L2 28469 L1 OR PALM OIL

=> s 12 and (squalene or carotene or tocol or tocopherol or sterol)

7164 SQUALENE

81 SQUALENES

7187 SQUALENE

(SQUALENE OR SQUALENES)

30260 CAROTENE

22385 CAROTENES

42020 CAROTENE

(CAROTENE OR CAROTENES)

241 TOCOL

111 TOCOLS

296 TOCOL

(TOCOL OR TOCOLS)

29897 TOCOPHEROL

9120 TOCOPHEROLS

32544 TOCOPHEROL

(TOCOPHEROL OR TOCOPHEROLS)

23929 STEROL

23240 STEROLS

34663 STEROL

(STEROL OR STEROLS)

L3 2632 L2 AND (SQUALENE OR CAROTENE OR TOCOL OR TOCOPHEROL OR STEROL)

=> s 13 and (ester or esterif?)

578873 ESTER

430596 ESTERS

808395 ESTER

(ESTER OR ESTERS)

128373 ESTERIF?

L4 542 L3 AND (ESTER OR ESTERIF?)

=> s 14 and distill?

116892 DISTILL?

162572 DISTD

1 DISTDS

162572 DISTD

(DISTD OR DISTDS)

25350 DISTG

174452 DISTN

1769 DISTNS

175188 DISTN

(DISTN OR DISTNS)

371370 DISTILL?

(DISTILL? OR DISTD OR DISTG OR DISTN)

L5 105 L4 AND DISTILL?

=> s 15 and adsorb?

326399 ADSORB?

L6 2 L5 AND ADSORB?

=> s 15 and desorb?

27502 DESORB?

L7 1 L5 AND DESORB?

=> s 15 and alcohol

237628 ALCOHOL

163025 ALCOHOLS

370539 ALCOHOL

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(ALCOHOL OR ALCOHOLS)

571631 ALC

189313 ALCS

668085 ALC

(ALC OR ALCS)

803469 ALCOHOL

(ALCOHOL OR ALC)

L8 38 L5 AND ALCOHOL

=> dup rem 16 17 18

PROCESSING COMPLETED FOR L6

PROCESSING COMPLETED FOR L7

PROCESSING COMPLETED FOR L8

L9 39 DUP REM L6 L7 L8 (2 DUPLICATES REMOVED)

=> d 19 ibib hitstr abs 1-39

L9 ANSWER 1 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1288836 CAPLUS

DOCUMENT NUMBER: 144:24177

TITLE: Process for the recovery of **sterols** from organic material

INVENTOR(S): Sato, Setsuo; Albiez, Wolfgang; Araujo, Alexandre S.; Bueno De Almeida, Wanderson

PATENT ASSIGNEE(S): Cognis Brasil Ltda., Brazil

SOURCE: PCT Int. Appl., 17 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005116048	A1	20051208	WO 2004-BR82	20040531
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRIORITY APPLN. INFO.:			WO 2004-BR82	20040531
AB	The recovery of sterols from organic material such as vegetable oil distillate , comprises (a) reacting the organic material containing free sterols and sterol derivs. with (i) polyols or (ii) polyamines or (iii) alkanolamines or (iv) alcs. to liberate the free sterols , (b) reacting the residual reactants and their esters or amides with epoxy substances and subsequently, (c) separating the free sterols from the remaining components by short path distillation , thin film evaporators or flash evaporators. This process is an efficient, economical and environmentally friendly way for the concentration and purification of			

sterols with a high process yield in the recovery of **sterols** and a high final **sterol** purity.

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REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 2 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:490262 CAPLUS
DOCUMENT NUMBER: 143:25549
TITLE: Recovery of phytonutrients such as carotenoids, tocopherols and sterols from edible oils
INVENTOR(S): Ho, David Sue San
PATENT ASSIGNEE(S): Carotech Inc., USA
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005051294	A2	20050609	WO 2004-US38774	20041118
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: MY 2003-4440 A 20031119
AB The present invention relates to an improved and integrated process for the extraction and purification of tocotrienols or tocopherols, carotenoids and sterols from vegetable and other edible oils. Fatty acids in the vegetable oils are subjected to alc. esterification to form an ester-rich layer that includes fatty acid alkyl esters, carotenoids, tocotrienols or tocopherols, and sterols. The advantages of this process are that the tocotrienols or tocopherols, carotenoids and sterols are produced efficiently without any substantial decomposition or degradation of these phytonutrients.

L9 ANSWER 3 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:962899 CAPLUS
DOCUMENT NUMBER: 143:234975
TITLE: Hair dye compositions containing plant-derived lanolin substitutes
INVENTOR(S): Watanabe, Katsuhiro; Furusawa, Toshimitsu; Kuriyama, Hiroki; Suganuma, Hiroyuki
PATENT ASSIGNEE(S): Sanei Kagaku Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005232152	A2	20050902	JP 2004-167833	20040510
PRIORITY APPLN. INFO.:			JP 2003-194638	A 20030605
			JP 2004-43656	A 20040121

AB The invention relates to a hair dye composition characterized by containing plant-derived lanolin substitute, especially obtained by **distillation**, fatty acid **esterification**, decoloration, and deodorization of a byproduct of **tocopherol** extraction from a plant deodorized **distillate**, wherein the plant-derived lanolin substitute provides excellent water-holding property, moisturizing, and emollient effect to hair. A hair dye composition further containing plant oil, sucrose fatty acid **ester**, liquid fatty acid, hydrogenated plant oil, higher alc. and/or surfactant is also disclosed. A paste oil (**sterol**/ **sterol** fatty acid **ester**/hydrocarbon = 1.7/61/7.3 %) was prepared from a byproduct of soybean oil deodorization. The paste oil was mixed with other ingredients to make a hair dye composition

L9 ANSWER 4 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:962861 CAPLUS

DOCUMENT NUMBER: 143:253493

TITLE: Cosmetics or quasi-drugs containing compositions manufactured by catalytic **esterification** of **vegetable oil**-derived **sterol** - and **tocopherol**-containing fraction

INVENTOR(S): Koresawa, Takeshi; Noda, Isamu

PATENT ASSIGNEE(S): Croda Japan K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005232027	A2	20050902	JP 2004-39603	20040217
PRIORITY APPLN. INFO.:			JP 2004-39603	20040217
AB Cosmetics or quasi-drugs contain compns., which are manufactured by catalytic esterification of distillate generated in deodorization of vegetable oils , purification of the esterified products, and optionally hydrogenation. Thus, a distillate (acid value 77.2, tocopherol 8.2%, tocopherols 11.9%) was treated with p-MeC ₆ H ₄ SO ₃ H at 160° under a decreased pressure for 8 h. The reaction product with acid value 55.9 was subjected to mol. distillation to remove unreacted fatty acids, purified, and hydrogenated to give a composition with m.p. 42° and acid value 0.1. A cream containing the composition was nonsticky and moisturized skin.				

L9 ANSWER 5 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:302024 CAPLUS

DOCUMENT NUMBER: 142:360326

TITLE: Hair conditioners containing phytosterol wax fatty acid **esters** and their bases

INVENTOR(S): Watanabe, Katsuhiro; Furusawa, Toshimitsu; Kuriyama,

Hiroki; Suganuma, Hiroyuki

PATENT ASSIGNEE(S): Sanei Kagaku Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

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LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005089447	A2	20050407	JP 2004-167832	20040510
PRIORITY APPLN. INFO.:			JP 2003-194638	A 20030605
			JP 2003-322254	A 20030811

AB The conditioners contain compns. prepared by (1) **distillation** of byproducts formed in isolation of **tocopherol** from plant deodorization **distillates**, (2) **esterification** with fatty acid, (3) decoloration, and (4) deodorization. The compns. are useful as lanolin substitutes. The bases contain higher **alcs.** and tertiary amino amides.

L9 ANSWER 6 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2004:446880 CAPLUS
DOCUMENT NUMBER: 141:6196
TITLE: A method of extracting and isolating minor components from **vegetable oil**
INVENTOR(S): Choo, Yuen May; Ng, Mei Han; Ma, Ah Ngan; Basiron, Yusof
PATENT ASSIGNEE(S): Malaysian Palm Oil Board, Malay.
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1424013	A1	20040602	EP 2003-257486	20031127
EP 1424013	B1	20060419		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
US 2004158083	A1	20040812	US 2003-721001	20031125
JP 2004175805	A2	20040624	JP 2003-397344	20031127
AT 323428	E	20060515	AT 2003-257486	20031127
PRIORITY APPLN. INFO.:			MY 2002-4432	A 20021127

AB A process for the separation and recovery of minor components from **vegetable oil** such as **palm oil**.
Esterified palm oil is subjected to mol.
distillation giving a concentrate rich in minor components. The concentrate is then adsorbed to **adsorbents** such as normal phase silica gel, reversed phase (particularly C18) silica gel or neutral alumina as well as polymer absorbents such as polyethylene glycol and polyacrylate polyalc. Minor components such as **squalene**, **carotenes**, **tocols** and **sterols** are then selectively desorbed, separated and recovered using solvents operating at isocratic conditions. The desorption of the said minor components are sped up by applying pressure of between 0.2 to 50 bar. By the same method, individual **tocols** isomers from **palm oil** can also be separated and recovered.

L9 ANSWER 7 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:181796 CAPLUS
DOCUMENT NUMBER: 140:214262
TITLE: Extraction of vitamin E, phytosterols and

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INVENTOR(S): **squalene from palm oil**
May, Choo Yuen; Nang, Harrison Lau Lik; Ah, Ngan Ma;
Basiron, Yusof
PATENT ASSIGNEE(S): Malaysian Palm Oil Board, Malay.
SOURCE: Eur. Pat. Appl., 21 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1394144	A1	20040303	EP 2003-255148	20030819
EP 1394144	B1	20060405		
R: AT, BE, CH, DE, DK, ES, FR, IE, SI, LT,	GB, GR, IT, LI, LU, NL, CY, AL, TR, BG, CZ, EE,	SE, MC, PT, HU, SK		
CN 1477147	A	20040225	CN 2003-108202	20030325
JP 2004143150	A2	20040520	JP 2003-295065	20030819
US 2005250953	A1	20051110	US 2003-642596	20030819
AT 322474	E	20060415	AT 2003-255148	20030819
PRIORITY APPLN. INFO.:			MY 2002-3069	A 20020820

AB Phytosterols, **squalene** and Vitamin E are recovered from a phytonutrient concentrate derived from crude **palm oil** by **esterification**, transesterification, vacuum **distillation**, saponification, crystallization, and organic solvents partitioning. Crude **palm oil** is subjected to **esterification** and transesterification for the production of crude **palm oil** Me **esters**. The phytonutrient concentrate containing phytosterols, **squalene**, Vitamin E and unreacted monoglycerides is recovered from the crude **palm oil** Me **esters** by a multi-stage vacuum **distillation** in which components with a higher mol. weight are filtered during the second-stage vacuum **distillation**. The purified phytonutrient concentrate is subjected to saponification and the unsaponifiable matter is added to a combination of solvents for crystallization of the phytosterols. The filtrate enriched in **squalene** and Vitamin E is separated to its individual **squalene**-rich layer and vitamin E-rich layer via organic solvent partitioning. A process flow diagram is presented.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 8 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:504639 CAPLUS
DOCUMENT NUMBER: 143:175946
TITLE: Method for producing refuse-derived fuel
INVENTOR(S): Su, Minghua
PATENT ASSIGNEE(S): Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, No pp.
given
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1532264	A	20040929	CN 2003-118184	20030319

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PRIORITY APPLN. INFO.: CN 2003-118184 20030319
AB The title method comprises **esterification** of waste **vegetable oils** with low alc. in the presence of catalysts in a catalytic reactor to obtain mixed fatty **esters**; washing and neutralizing the product in a water washing tank to pH 6-8; sepg the product in a cooling tank at 0-2°; filtering the frozen liquid to obtain byproduct coarse **sterol**; pumping the filtrate to a **distilling** tower and heating to 80-110° for 0.8-1.2 h for recovering excessive low alc. and water; pumping the residual liquid into an **ester distilling** reactor, pumping to 0.4-10 KPa, heating to 200-260° and condensating to recover biodegradable clean fuel. The method reduces lining cost, can produce diesel fuel and prevents secondary pollution.

L9 ANSWER 9 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:2987 CAPLUS
DOCUMENT NUMBER: 140:58755
TITLE: Process for recovery of plant **sterols** from by-product of **vegetable oil** refining
INVENTOR(S): Czuppon, Tibor; Kemeny, Zsolt; Kovari, Endrene; Recseg, Katalin
PATENT ASSIGNEE(S): Cereol Novevnyolajipari Rt., Hung.
SOURCE: PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004000979	A1	20031231	WO 2002-HU62	20020702
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2501963	AA	20031231	CA 2002-2501963	20020702
AU 2002321664	A1	20040106	AU 2002-321664	20020702
BR 2002015782	A	20050301	BR 2002-15782	20020702
EP 1520003	A1	20050406	EP 2002-755376	20020702
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
JP 2005530018	T2	20051006	JP 2004-515075	20020702
CN 1732251	A	20060208	CN 2002-829395	20020702
PRIORITY APPLN. INFO.:			HU 2002-2024	A 20020619
			WO 2002-HU62	W 20020702

AB The process for recovery of plant **sterols** and **tocopherols** from deodorization **distillates** formed during chemical or phys. refining of **vegetable oils** consists of the following steps: free fatty acids are removed from the deodorization **distillate** by vacuum **distillation** or by continuation solvent saponification, after the removal of free fatty acids, the received material is reacted with an aromatic carboxylic acid anhydride at a temperature of

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50-150° C, under reduced pressure, after the treatment with anhydride, **tocopherols** are removed from the mixture, and crystalline free **sterols** are recovered from the **distillation** residue containing **sterol esters**, di- and triglycerides by transesterification.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 10 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:747842 CAPLUS
DOCUMENT NUMBER: 139:262777
TITLE: Method of recovering free fatty acids having low **ester** content and high acid value
INVENTOR(S): Elsasser, A. Fred; Blewett, C. William
PATENT ASSIGNEE(S): Cognis Corporation, USA
SOURCE: U.S., 8 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6623604	B1	20030923	US 2000-586917	20000605
PRIORITY APPLN. INFO.:			US 2000-586917	20000605

AB Methods of recovering free fatty acids having a low **ester** content from alkanol-containing solns. and oil mixts. containing **tocopherols** are disclosed which involve atmospheric or vacuum stripping at low temps. The recovered fatty acids have a high acid value, and have high com. value in the production of high quality (high acid value) products, e.g., dimerized fatty acids, useful in polyamide resins.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 11 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:165083 CAPLUS
DOCUMENT NUMBER: 138:221753
TITLE: Method for separation of fatty acid steryl **ester**
INVENTOR(S): Kitano, Mikihiro; Nakai, Seiichi; Suenaga, Shoji; Hirota, Masunori; Shimada, Hiroshi; Nagao, Toshihiro; Sugihara, Akio; Tominaga, Yoshio
PATENT ASSIGNEE(S): Osaka City, Japan; Yashiro K. K.
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003064093	A2	20030305	JP 2001-252362	20010823
PRIORITY APPLN. INFO.:			JP 2001-252362	20010823

AB An efficient method for separation and high-purity purification of fatty acid **esters** of **sterols** such as β -sitosterol, brassicasterol, campesterol, and stigmasterol from byproducts (**distillation** scum residue) of **vegetable** oil purification step is provided. A method for separation of fatty acid steryl **esters**

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from a mixture containing fatty acid steryl **esters** and neutral fats or oils (i.e. mono-, di-, and triglycerides) comprises (1) selective hydrolysis, saponification, or transesterification of neutral fats or oils or
(2) adding free fatty acids or fatty acid **alc. esters** to the mixture containing fatty acid steryl **esters** and neutral fats or oils and selectively converting diglycerides into triglycerides in particular in the presence of esterase, more specifically lipase and (3) then separation of fatty acid steryl **esters**, in particular by **distillation** under high temperature and high vacuum. The mixture containing fatty acid steryl **esters** and neutral fats or oils is a pot (scum) residue of a **vegetable oil** deodorization **distillate**. **Sterols** or **sterol** fatty acid **esters** have attracted much attention due to the effect on lowering blood cholesterol value and are expected to have a large demand since certain products containing them such as salad oils, dressings, or margarine have been developed. Thus, 10 kg soybean oil deodorization **distillate** was **distilled** by a thin-film **distillation** apparatus at 4.0 Pa (0.03 mmHg) and 250° to give 7.1 kg a **distillate** fraction and 2.9 kg pot residue. The pot residue (1 kg) containing fatty acid 1.4, **tocopherol** 0.73, **sterols** 3.96 (brassicasterol 0.08, campesterol 0.75, stigmasterol 0.75, and β -sitosterol 2.38 weight%), fatty acid steryl **esters** 43.41, diglycerides 10.22, and triglycerides 30.01 weight%, 400 g H₂O, and Lipase-OF (lipase of C. cylindracea, Meito Industry, Japan) (20 U per 1 g of the pot residue) were incubated at 40° for 10 h to give a mixture containing free fatty acids 45.48, **sterols** 3.71, fatty acid steryl **esters** 43.87, diglycerides 0, and triglycerides 0 weight%, which indicated that the neutral oils were selectively and completely hydrolyzed.

L9 ANSWER 12 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:

2002:638337 CAPLUS

DOCUMENT NUMBER:

137:168655

TITLE:

Recovery of minor components and refining of **vegetable oils** and fats

INVENTOR(S):

Tou, Gee Ping

PATENT ASSIGNEE(S):

Palm Specialty Products, Sdn. Bhd, Malay.

SOURCE:

U.S. Pat. Appl. Publ., 7 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002115876	A1	20020822	US 2001-871606	20010531
US 6649781	B2	20031118		
SG 102626	A1	20040326	SG 2001-2961	20010516
GB 2371545	A1	20020731	GB 2001-28593	20011129
GB 2371545	B2	20030702		
GB 2387384	A1	20031015	GB 2003-5425	20011129
GB 2387384	B2	20031224		
GB 2387390	A1	20031015	GB 2003-5427	20011129
GB 2387390	B2	20031224		

PRIORITY APPLN. INFO.: MY 2000-5886 A 20001214
GB 2001-28593 A 20011129

AB The invention relates to a process for the recovery of minor components

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and refining of **vegetable oils** and fats from crude **vegetable oils** and fats. The said invention describes the following process: recovery of minor components and refining of **vegetable oils** and fats from crude **vegetable oils** and fats without destroying naturally occurring components, said process comprising the steps of: a) removal of polar components from the crude **vegetable oils** and fats using lower alkyl **alc.** or any lower alkyl **alc.**-water mixture; b) removal of **alc.** from the product obtained in step (a) by **distillation**; c) addition of a suitable quantity of bleaching earth to the product obtained in step (b) at normal bleaching temperature followed by filtration; and d) deodorization of the product obtained in step (c) at a low temperature

L9 ANSWER 13 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:607747 CAPLUS

DOCUMENT NUMBER: 137:154217

TITLE: Process and apparatus for purification of **carotenes** from natural fats and oils

INVENTOR(S): Matsuo, Takayuki; Izumi, Jiro; Kitamura, Hiroshi; Tanaka, Yoshio

PATENT ASSIGNEE(S): Lion Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002226723	A2	20020814	JP 2001-21495	20010130
PRIORITY APPLN. INFO.:			JP 2001-21495	20010130

AB The process comprises **esterifying** natural fats and oils containing ≥ 400 ppm **carotenes** with lower **alcs.**, extracting the resulting **esters** containing **carotenes** ≥ 350 ppm and having acid value ≤ 0.5 with hydrophilic solvents for separating into phase (A) containing $\geq 0.8\%$ **carotenes** and phase (B) containing ≤ 150 ppm **carotenes**, and purifying the phase A with a chromatograph. Chromatographs may comprise guard columns and main columns. Crude **palm oil** was **esterified** with MeOH at 70° , extracted, and concd, and mol.-**distilled** to give a concentrate containing 14 weight% **carotenes**, which was isolated with chromatograph column.

L9 ANSWER 14 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:119296 CAPLUS

DOCUMENT NUMBER: 136:167561

TITLE: Process for the isolation of **sterols** from the residues of fatty-acid or methyl-**ester** production

INVENTOR(S): Schwarzer, Joerg; Gutsche, Bernhard; Wollmann, Gerhard

PATENT ASSIGNEE(S): Cognis Deutschland GmbH, Germany

SOURCE: Eur. Pat. Appl., 7 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1179536	A2	20020213	EP 2001-118218	20010728
EP 1179536	A3	20050608		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
DE 10038442	A1	20020221	DE 2000-10038442	20000807
US 2002058827	A1	20020516	US 2001-923629	20010807
US 6956125	B2	20051018		

PRIORITY APPLN. INFO.: DE 2000-10038442 A 20000807
 AB A process for obtaining **sterols** from the residue of fatty acid and/or Me **ester** production is characterized by: (a) in the residue on hand free fatty acids are **esterified** with a polyhydroxy or lower monohydroxy **alc.**, after that (b) the mixture containing partial glycerides is alcoholized at 90 - 145° and a pressure of 2 - 10 bar over 2 - 20 mins with a lower **alc.** in the presence of a basic catalyst, (c) after the alcoholysis the excess lower **alc.** is **distilled** from the reaction mixture, (d) the alcoholysis catalyst as well as the included glycerin if necessary are separated, (e) the fatty acid **ester** is **distilled** from the mixture and (f) the bottoms containing **sterol** and remaining partial glycerides through a further alcoholysis at 115 - 145° and a pressure of 2 - 10 bars over 4 - 8 h leads to free **sterol esters** and fatty acid **esters**. Thus, the **distillation** residue from the cleavage of soybean oil is treated with glycerin in the presence of tin isoctanoate at 215° and 7 mbar; the residue is then treated with MeOH containing NaOMe at 137° and 6 bar for 8 mins.; the Me **esters** are then **distilled** out; then residue is again treated with MeOH containing NaOMe for 8 h at 120° and 5 bar; the methanol is then flash evaporated and the catalyst neutralized with citric acid; the product mixture is washed with H₂O to give a product containing 7.5% free **sterols** and 0.04% bound **sterols**; the **sterol** mixture contains: 1.2% cholesterol, 1.8% brassicasterol, 23.1% campesterol, 15.3% stigmasterol, 48.9% β-sitosterol, 2.2% Δ₅-avenasterol, 0.3% Δ₇-avenasterol and 0.05% citrosadienol.

L9 ANSWER 15 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:630949 CAPLUS

DOCUMENT NUMBER: 135:166293

TITLE: Isolation and extraction of **tocopherols** and other compounds from byproducts of **vegetable oil** refining

INVENTOR(S): Muro Benayas, Andres-Eloy

PATENT ASSIGNEE(S): Biocaps, S.A., Spain

SOURCE: Span., 11 pp.

CODEN: SPXXAD

DOCUMENT TYPE: Patent

LANGUAGE: Spanish

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
ES 2152856	A1	20010201	ES 1998-2098	19981008
ES 2152856	B1	20011116		

PRIORITY APPLN. INFO.: ES 1998-2098 19981008
 AB Fatty acids are **esterified** with monohydric **alcs.** in byproducts of **vegetable oil** refining by using an organic or inorg. catalyst. Subsequently, the catalyst is removed and the **esters** formed are vacuum **distilled** in a laminar flow system, the residue being subjected to liquid-liquid extraction **Sterols**

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and hydrocarbons are separated by solvent-phase fractionation. The products are concentrated by mol. double **distillation**. Thus, the byproduct may be obtained from the deodorization of sunflower, soybean, corn, or rapeseed oils; methanol and(or) ethanol may be used as the monohydroxy **alc** .; and sulfuric acid or p-toluenesulfonic acid may be used as the catalyst.

L9 ANSWER 16 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:603804 CAPLUS
DOCUMENT NUMBER: 131:218983
TITLE: Method for preparation of phytosqualane
INVENTOR(S): Ponsati Obiols, Oriol; Bigorra Llosas, Joaquin; Pi Subirana, Rafael
PATENT ASSIGNEE(S): Henkel K.-G.a.A., Germany
SOURCE: Ger., 8 pp.
CODEN: GWXXAW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19830171	C1	19990916	DE 1998-19830171	19980706
WO 2000001645	A1	20000113	WO 1999-EP4455	19990626
W: AU, CN, ID, JP, KR, NZ, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9949015	A1	20000124	AU 1999-49015	19990626
EP 1094998	A1	20010502	EP 1999-932740	19990626
EP 1094998	B1	20021211		
R: DE, ES, FR, IT				
ES 2186380	T3	20030501	ES 1999-932740	19990626
PRIORITY APPLN. INFO.:			DE 1998-19830171	A 19980706
			WO 1999-EP4455	W 19990626

AB Phytosqualane is prepared for cosmetic or pharmaceutical use from **vegetable oil** production residues by (a) **esterifying** the fatty acid component of the residue with a polyol, (b) **distg** . the reaction mixture to produce a polyol **ester**-containing residue and a phytosqualene-containing **distillate**, (c) hydrogenating the **distillate** to form a squalane-rich fraction, (d) fractional crystallization to remove paraffins, (e) sulfating lipid impurities in the liquid phase with SO₃, ClSO₃H, or H₂NSO₃H, and (f) washing with basic Na₂CO₃ solution and deodorizing by stripping with steam. Phytosqualane was obtained in a purity of 99.6%.

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 17 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:515711 CAPLUS
DOCUMENT NUMBER: 127:126694
TITLE: Recovery of **tocopherols**
INVENTOR(S): Hunt, Tracy K.; Schwarzer, Joerg
PATENT ASSIGNEE(S): Henkel Corporation, USA
SOURCE: PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9721697	A1	19970619	WO 1996-US19146	19961206
W: BR, CA, CN, JP, MX, TR, UA, RW: AT, BE, CH,	AM, AZ, BY, KG, KZ, MD, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE	DE, DK, ES, FI,	RU, TJ, TM.	
US 5703252	A	19971230	US 1996-753460	19961125
IN 182428	A	19990410	IN 1996-MA2198	19961205
CA 2240123	AA	19970619	CA 1996-2240123	19961206
EP 866789	A1	19980930	EP 1996-945568	19961206
R: AT, BE, CH, CN 1204331	DE, DK, ES, FR, A	GB, GR, IT, LI, LU, NL, SE, PT, IE	P 19951213	
BR 9611932	19990106	CN 1996-199004	19961206	
TR 9801067	A	19990302	BR 1996-11932	19961206
JP 2002515861	T2	20020521	TR 1998-1067	19961206
	T2	20020528	JP 1997-522074	19961206
PRIORITY APPLN. INFO.:			US 1995-8762P	P 19951213
			US 1996-753460	A 19961125
			WO 1996-US19146	W 19961206

AB Starting from a mixture containing **tocopherol**, fats and/or fat derivs., more particularly fatty acids, and optionally **sterol** and/or **sterol** derivs., the free fatty acids present in the mixture are **esterified** with an **alc.** and fatty glycerides are transesterified with an **alc.** in the presence of a zinc oxide and/or zinc hydroxide catalyst. After the **esterifications**, the excess lower **alc.** is **distilled** off from the reaction mixture. The transesterification catalyst and the glycerol present, if any, are removed and the fatty acid alkyl **ester** is **distilled** off from the mixture. Distillation of fatty acid alkyl **esters** can be accomplished with a packed column in sequence with a wiped film evaporator. The simultaneous recovery of **tocopherol** and **sterol** is possible. **Tocopherols** and **sterols** can be separated by the crystallization of **sterols** from a blend of organic solvents. Thus, **tocopherols** were separated from a **vegetable oil** deodorizer product containing fatty acids and fatty glycerides and **sterols** by using the above procedure involving MeOH.

L9 ANSWER 18 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1997:576509 CAPLUS
 DOCUMENT NUMBER: 127:225273
 TITLE: Process for the production of tocotrienol/
tocopherol blend concentrates
 INVENTOR(S): Barnicki, Scott Donald; Sumner, Charles Edwan, Jr.;
 Williams, Hampton Loyd Chip, III
 PATENT ASSIGNEE(S): Eastman Chemical Company, USA
 SOURCE: U.S., 12 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5660691	A	19970826	US 1995-558073	19951113
PRIORITY APPLN. INFO.:			US 1995-558073	19951113

AB Disclosed is an improved process for the preparation of tocotrienol/
tocopherol blend concs. from **vegetable oil**
distillates which are enriched in tocotrienols. Tocotrienol/
tocopherol blend concs. are obtained containing 20-80% tocotrienols/

tocopherols by weight, with an overall recovery of tocotrienols/**tocopherols** of 72% to 97%. The process is comprised first of an **esterification** reaction where the more volatile **alcs.** are converted to their less volatile fatty acid **esters**, followed by a series of **distillation** steps where components boiling higher and lower than the tocotrienols/**tocopherols** are separated from tocotrienols/**tocopherols** and other like boiling substances. Advantages of the process are that tocotrienol/**tocopherol** blend concs. are produced efficiently and economically in a min. number of steps without the use of solvents and with a relatively small capital investment.

L9 ANSWER 19 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1996:319146 CAPLUS
 DOCUMENT NUMBER: 125:9183
 TITLE: Production of **tocopherol** concentrates from **vegetable oil** byproducts by an **esterification/distillation** process
 INVENTOR(S): Barnicki, Scott D.; Sumner, Charles E., Jr.; Williams, H. Chip
 PATENT ASSIGNEE(S): Eastman Chemical Company, USA
 SOURCE: U.S., 17 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5512691	A	19960430	US 1994-334901	19941107
ZA 9509433	A	19960515	ZA 1995-9433	19951107
CA 2203550	AA	19960517	CA 1995-2203550	19951107
WO 9614311	A1	19960517	WO 1995-US14612	19951107
	W: AU, BR, CA, CN, CZ, HU, JP, MX, RU, SK, UA RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE			
AU 9641530	A1	19960531	AU 1996-41530	19951107
EP 790990	A1	19970827	EP 1995-939870	19951107
EP 790990	B1	20010620		
	R: DE, ES, FR, GB, IT, NL, PT			
BR 9509626	A	19980106	BR 1995-9626	19951107
CN 1171106	A	19980121	CN 1995-196967	19951107
JP 10508605	T2	19980825	JP 1995-515525	19951107
ES 2157350	T3	20010816	ES 1995-939870	19951107
PT 790990	T	20010928	PT 1995-939870	19951107
PRIORITY APPLN. INFO.:			US 1994-334901	A 19941107
			WO 1995-US14612	W 19951107

AB An improved process is described for the preparation of **tocopherol** concs. from **vegetable oil distillates**. **Tocopherol** concs. are obtained containing 20-80% **tocopherol** by weight, with an overall recovery of **tocopherol** of 72-97%. The process is comprised first of an **esterification** reaction where the more volatile **alcs.** are converted to their less volatile fatty acid **esters**, followed by a series of **distillation** steps where components boiling higher and lower than the **tocopherols** are separated from **tocopherols** and other like boiling substances. Advantages of the process are that **tocopherol** concs. are produced efficiently and economically in a min. number of steps without the use of solvents and with a relatively small capital investment.

L9 ANSWER 20 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1996:425358 CAPLUS
 DOCUMENT NUMBER: 125:60960
 TITLE: Obtaining carotenoid pigments from natural oils and fats
 PATENT ASSIGNEE(S): Palm-Oil Research Inst. of Malaysia, Malay.; Malaysian Palm Oil Board
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08100131	A2	19960416	JP 1994-237510	19940930
JP 3651935	B2	20050525		
AU 9474279	A1	19950928	AU 1994-74279	19940929
AU 694134	B2	19980716		
US 6072092	A	20000606	US 1996-640398	19960430
PRIORITY APPLN. INFO.:			MY 1994-659	A 19940318
			US 1994-304597	B1 19940912

AB Carotenoid pigments are obtained from natural oils and fats by (1) transesterifying a **carotene**-containing oil with a lower mono-**alc.** without destroying the pigments, (2) vacuum **distilling** the resulting mixture to remove alkyl **esters**, (3) subjecting the concentrated mixture to absorption separation to obtain a **carotene**-rich fraction, and (d) concentrating and absorption separating vitamin E-rich fraction.

Palm oil was converted to Me **esters** by reacting with methanol and **distilled** at 130-170°/60 mTorr to give a 4% **carotene** mixture which was subjected to a silica gel column and eluted with hexane first and then with isopropanol to give two **carotene**-rich fractions with **carotene** concentration 340000 ppm and 6500 ppm, resp.

L9 ANSWER 21 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1994:105736 CAPLUS
 DOCUMENT NUMBER: 120:105736
 TITLE: Process for extracting vitamin E and **sterols** from byproducts of **vegetable oil** refining
 INVENTOR(S): Sun, Dengwen; Qu, Delin; Liu, Fuzhen
 PATENT ASSIGNEE(S): Qinghua University, Peop. Rep. China
 SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 7 pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1074217	A	19930714	CN 1993-100259	19930114
CN 1037769	B	19980318		
PRIORITY APPLN. INFO.:			CN 1993-100259	19930114
AB The title process involves esterifying the distillate from deodorization of vegetable oil with MeOH or EtOH				

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in the presence of concentrated H₂SO₄ at 65-75° for 1-3 h, ending the **esterification** by adding water, allowing the product to stand, removing the lower layer (the water-H₂SO₄ phase), washing the oil layer with 80-100° water under neutral, alcoholyzing the resulting neutral oil with MeOH or EtOH in the presence of NaOH or KOH at refluxing temperature for 5-30 min, adding concentrated H₂SO₄, allowing the resulting mixture to

react for 30-60 min, ending the reaction by adding water, allowing the mixture to stand still, separating the alc.-water-H₂SO₄ phase, cooling the oil phase at 10-30° for 5-15 h, separating the obtained plant **sterols** by either **distillation** under vacuum or centrifugation, washing the filtrate with 70-100° water until neutral, degassing at 80-100° under reduced pressure, **distilling** the product at 20-40 Pa, ≤230° (giving the Me or Et **esters** of fatty acids), and **distilling** the residual liquid at 10-20 Pa to give, at ≤240° a Me **ester** fraction containing 7-35% vitamin E (this fraction collected for recycling) and at 240-280°, vitamin E. Deodorized **vegetable oil** was subjected to the above steps to give, at ≤240°, a fraction containing 8.2% vitamin E and at 240-280°, one containing 24.2% vitamin E.

L9 ANSWER 22 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1992:470129 CAPLUS

DOCUMENT NUMBER: 117:70129

TITLE: Crystallization method for obtaining a stigmasterol-enriched product from deodorizer **distillate**

INVENTOR(S): Tackett, Tommy L.; McCombs, Charles A.

PATENT ASSIGNEE(S): Eastman Kodak Co., USA

SOURCE: U.S., 4 pp.
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5117016	A	19920526	US 1991-699021	19910513
PRIORITY APPLN. INFO.:			US 1991-699021	19910513

AB A material enriched in stigmasterol (I) is isolated from deodorizer **distillate** [from **vegetable oil** processing] by:
(A) **esterifying** the **distillate**, (B) crystallizing the **esterified distillate** from a mixture of a C1-6 alc., H₂O, and a nonpolar solvent, and (optionally) (C) washing the enriched precipitate with a C5-10 hydrocarbon solvent. For example, 456 g **esterified** deodorizer **distillate** containing 3.54% I and 15.29% total **sterols** was dissolved in heptane 300, MeOH 20, and H₂O 20 mL, and the solution was cooled to 5°, held 1 h, and filtered. Washing the precipitate with 3 + 50 mL heptane to remove **tocopherols** and drying at 50° gave 58.3 g product containing 24.7% I and 96.1% free **sterols**, i.e. 95.4% yield of I.

L9 ANSWER 23 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:534644 CAPLUS

DOCUMENT NUMBER: 115:134644

TITLE: Recovery of carotenoids from glyceridic oils and **carotene**-containing solutions

INVENTOR(S): Keat, Ooi C.; May, Choo Y.; Hock, Augustine O. S.

PATENT ASSIGNEE(S): Palm Oil Research and Development Board, Malay.

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SOURCE: U.S., 4 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5019668	A	19910528	US 1989-364375	19890609
AU 8936320	A1	19891221	AU 1989-36320	19890614
AU 634476	B2	19930225		

PRIORITY APPLN. INFO.: AU 1988-8768 A 19880614
AU 1988-8770 A 19880615

AB A process for recovering **carotenes** present in **carotene**-containing solns., e.g. glyceridic oils, comprises (1) transesterification of the oil with a monohydric **alc.** to produce glycerol and **esters**, (2) addition of 0.1-50 weight% edible oil, and (3) vacuum **distillation** at <0.060 Torr and <200°. Thus, crude **palm** oil was transesterified with MeOH and the resulting **esters** were separated from the glycerol. Dried **esters** containing **carotene** 700 ppm were mixed with refined, deodorized red **palm** oil in a ratio of 40:1. The mixture was passed through a vacuum mol. **distillation** column at 0.020-0.025 Torr and 90°. The concentration of **carotene** in the concentrate after **distillation** was 18,762 ppm.

L9 ANSWER 24 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1990:141246 CAPLUS
DOCUMENT NUMBER: 112:141246
TITLE: Recovery of carotenoid dyes from **palm** oils
INVENTOR(S): Ooi, Cheng Keat; Choo, Yuen May; Ong, Augustine Soon Hock
PATENT ASSIGNEE(S): Palm Oil Research and Development Board, Malay.
SOURCE: Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 349138	A2	19900103	EP 1989-305826	19890609
EP 349138	A3	19901212		
EP 349138	B1	19940824		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
ES 2058526	T3	19941101	ES 1989-305826	19890609
JP 02040358	A2	19900209	JP 1989-153561	19890615
JP 07080834	B4	19950830		

PRIORITY APPLN. INFO.: AU 1988-8770 A 19880615
AB Carotenoid dyes are effectively recovered from plant and **vegetable** oils (e.g., **palm** oil, palm olein, palm stearin, etc.) without destruction by transesterifying the **carotene**-containing oil with an **alc.** (e.g., MeOH, EtOH, iso-PrOH), adding 0.1-50% of an edible oil to the transesterified oil (e.g., palm kernel oil, fish oil, sunflower oil, coconut oil, olive oil, peanut oil, soybean oil, rapeseed oil, corn oil, carrot oil), and **distilling** the transesterified mixture at <200°/<0.060 torr. In

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this manner, crude **palm oil (carotene)** content 645 ppm) was transesterified with MeOH in the presence of a base catalyst, the transesterified oil separated and mixed with refined and deodorized red **palm oil**, and the mixture **distd** . at 90°/0.020-0.025 torr, producing an oil having a **carotene** content 6570 ppm.

L9 ANSWER 25 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 1988:529381 CAPLUS

DOCUMENT NUMBER: 109:129381

TITLE: Manufacture of **carotene**-containing condensates

INVENTOR(S): Hama, Itsuo; Hara, Noboru; Izumimoto, Hiroyuki; Nakamura, Masanobu

PATENT ASSIGNEE(S): Lion Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63005073	A2	19880111	JP 1986-150538	19860626
JP 07035366	B4	19950419		

PRIORITY APPLN. INFO.: JP 1986-150538 19860626

AB Concs. of **carotene** (I), useful as food coloring additive (no data), were prepared by contacting oily substances containing I with (meth)acrylate **ester** resins to **adsorb** I and oily substances on the resins, contacting the resins with alcs. to elute the oily substances, and contacting the resins with I-dissolving hydrophobic solvents to elute I. Thus, a solution of 30 g crude **palm oil** containing 600 ppm I in 100 mL **isopropanol** was passed through a column packed with poly(Me methacrylate) at 55°, then 100 mL **isopropanol** was passed through to elute **palm oil**.

Then, 100 mL n-hexane was passed through at room temperature and the eluent was **distilled** to give 2.5 g concentrate containing 5200 ppm I.

L9 ANSWER 26 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1987:125874 CAPLUS

DOCUMENT NUMBER: 106:125874

TITLE: Concentration and purification of vitamin K1

INVENTOR(S): Kurihara, Kayoko; Takagi, Yoshiaki

PATENT ASSIGNEE(S): Nisshin Oil Mills Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61249947	A2	19861107	JP 1985-90577	19850425
JP 06053701	B4	19940720		

PRIORITY APPLN. INFO.: JP 1985-90577 19850425

AB The deodorized **distillate** generated in the purification process of various vegetable fats and oils was **esterified**, then the **esters** in alc. solution were treated with OH--type anion

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exchangers substituted with the same **alcs.**, and then an **alc.** solution of acids was passed over the resin to give concentrated vitamin K1 in high purity. Thus, deodorized soybean oil **distillate** containing 243 ppm vitamin K1 and whose **sterols** were eliminated was **esterified** with MeOH, and then mixed with 3-fold MeOH. This MeOH solution was passed over the anion exchanger substituted with MeOH, which was then eluted with 5% H₃BO₃/MeOH solution to give a solution containing 5800 ppm vitamin K.

L9 ANSWER 27 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1983:89081 CAPLUS

DOCUMENT NUMBER: 98:89081

TITLE: Concentration of **tocopherols**

PATENT ASSIGNEE(S): Nisshin Oil Mills Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 57144281	A2	19820906	JP 1981-29926	19810304
JP 01018913	B4	19890407		

PRIORITY APPLN. INFO.: JP 1981-29926 19810304

AB **Tocopherols**, as by-products from **vegetable oil** deodorization **distillation**, were concentrated by addition of polyhydric **alcs.** to **esterify** the fatty acids and extraction with aqueous **alcs.**. Thus, 1000g soybean oil deodorization **distillate** containing 18.6% **tocopherols** was refluxed with 38.8 g glycerol at 180-240° to give 1005 g **ester**, to which was added 90% aqueous EtOH at 45° to give 86% **tocopherols**.

L9 ANSWER 28 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1978:422568 CAPLUS

DOCUMENT NUMBER: 89:22568

TITLE: **Carotene** food color

INVENTOR(S): Yamada, Koichi; Egawa, Makoto; Hoshiya, Iwao

PATENT ASSIGNEE(S): Lion Fat and Oil Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 53026360	A2	19780311	JP 1976-101462	19760825
JP 60045228	B4	19851008		

PRIORITY APPLN. INFO.: JP 1976-101462 A 19760825

AB Glycerides are separated from **carotene**-containing oil; the residue is subjected to saponification, mixed with lower **alcs.**, and extracted with organic solvents; removal of the organic solvent from the extract yields a **carotene** concentrate, which is used as a food-coloring agent. Thus, **palm oil** was subjected to alcoholysis to decompose glycerides to glycerol and fatty acid **esters**. The fatty acid **ester**-containing fraction was **distilled** to remove fatty acid **esters**. The residue 100, KOH 22.4, and MeOH 153 parts was

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refluxed for 2 h, mixed with 121.5 parts MeOH and 126.5 parts water, and extracted with hexane followed by **distillation** to yield 2.39 parts concentrate containing 17.1% **carotene**.

L9 ANSWER 29 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1977:138309 CAPLUS

DOCUMENT NUMBER: 86:138309

TITLE: Production of **carotene** concentrate

INVENTOR(S): Yamada, Koichi; Endo, Yoshihisa; Hoshiya, Iwao

PATENT ASSIGNEE(S): Lion Fat and Oil Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 51147532	A2	19761217	JP 1975-71657	19750613
JP 57000341	B4	19820106		

PRIORITY APPLN. INFO.: JP 1975-71657 A 19750613

AB A mixture of **carotene**-containing glyceride oil (acid number 2-40) and lower **alcs.** was treated with dehydrated cation-exchange resin (H⁺ type) to **esterify** free fatty acids and water was continuously removed; glycerides in the oil were transesterified with lower **alcs.** at ≤60° and the reaction products were separated into the glycerol and **ester** phases. The fatty acid **esters** were removed by **distillation** at ≤130° to obtain a **carotene**-rich residue that could be used as a coloring agent. Thus, 100 parts **palm oil** (acid number 5.4, **carotene** content 450 ppm) and 10 parts MeOH were mixed and passed through a cation-exchange column to obtain **palm oil** with an acid number of 0.2. The oil was mixed with 35 parts MeOH and 0.5 parts NaOH, stirred at 60° for 1 h, and the light liquid phase (96 parts) was separated for **distillation** of Me **esters** at 80° and 10-3 mm to obtain 4.8 parts residue containing 0.91% **carotene**.

L9 ANSWER 30 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1967:412811 CAPLUS

DOCUMENT NUMBER: 67:12811

TITLE: Utilization of [vegetable oil]

concentrate containing **tocopherols**. I.

Separation of concentrate components by thin-layer chromatography and some properties of reducing substances

AUTHOR(S): Takeuchi, Takahiro; Tatsukawa, Toyokazu

CORPORATE SOURCE: Ind. Res. Inst., Kobe, Japan

SOURCE: Yukagaku (1967), 16(4), 185-93

CODEN: YKGKAM; ISSN: 0513-398X

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB It is generally accepted that the deodorized condensates obtained in the refining of **vegetable oils** contain 1-10% **tocopherols**. The condensates are good raw materials for preparation of α- **tocopherol** or **tocopherol** concentrates. The concentrate containing 42.6% α-type **tocopherols** was prepared by **esterification** and **distillation** of the soybean oil condensate. Thin-layer chromatog. was used to analyze the concentrate components prior to studies on utilization of the concentrate. For

analysis of these components, nonpolar and polar developing solvent systems were at least necessary. Hydrocarbons, **squalene**, and 5 other unknown components were separated from each other in nonpolar solvent systems, such as naphtha. On the contrary, α , γ , and δ -**tocopherol**, higher **alcs.**, and **sterols** were separated, each giving sep. spots in polar solvent systems, such as C6H14-Et2O (7:3 by volume). These spots could be detected by uv illumination and spraying with solns. such as iodine-C6H6, 50% H2SO4, or Emmerie-Engel reagent. 20 references.

L9 ANSWER 31 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1960:34416 CAPLUS

DOCUMENT NUMBER: 54:34416

ORIGINAL REFERENCE NO.: 54:6798g-i,6799a-i,6800a-h

TITLE: **Tocopherols.** V. Structural studies on ϵ - and ζ - **tocopherol**

AUTHOR(S): Green, Joseph; McHale, D.; Marcinkiewicz, S.; Mamalis, P.; Watt, P. R.

CORPORATE SOURCE: Vitamins Ltd., Tadworth, UK

SOURCE: Journal of the Chemical Society (1959) 3362-73

CODEN: JCSOA9; ISSN: 0368-1769

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB Natural ϵ - **tocopherol** (I) was shown to differ from synthetic 5-methyltocol (II), with which it had previously been identified. Spectroscopic, chromatog., synthetic, and degradative evidence was presented to confirm the nature of the synthetic compound I would appear to be a 5,8-disubstituted chromanol, related to **tocols**, but perhaps with altered substitution at C-2. Natural ζ - **tocopherol** (III) from wheat bran was not identical with 5,7-dimethyltocol (IV), which structure had been given it, but appeared to be trisubstituted representative in the same series as I. The ζ -**tocopherol** that occurs in rice, however, was apparently identical with authentic IV. The product from 80 g. of wheat bran oil when distilled at 140°/0.005 gave 37 mg. of a pale yellow oil, I, λ 296 m μ , λ min. 258 m μ in **alc.**, ν 3390, 2907, 1451, 1410, 1374, 1229, 1164, 1095, 1059, and 857 cm.⁻¹

Tocols and **tocopherols** (20 μ g.) were run side by side on sheets of paper. Rf values measured after 4 h. for **tocol**, 5-, 7-, 8-methyltocol, and I **tocopherol** were, resp., 0.67, 0.52, 0.49, 0.52, and 0.62. The nitroso derivs. were prepared by nitrosation of each **tocopherol** (500 γ) and chromatog. purification by separation on sheets of paper impregnated with ZnCO₃. The yellow bands were eluted with Et2O, evaporated, and the nitroso derivs. obtained as yellow oils. The following consts. were obtained [derivative, λ maximum (m μ), λ min. (m μ), Rf (93% volume/volume EtOH), IR peaks in cm.⁻¹ given]: 5(or 7)-nitrosotocol, 405-410, 326, 0.59, 2924, 1732, 1529, 1460, 1262; 7(or 5)-nitrosotocol, 404, 330-335, 0.27, 2924, 1529, 1460; 5-nitroso-7-methyltocol, 415, 358, 0.31, 2895, 1528, 1456, 1262; 7-nitroso-5-methyltocol, 413, 338, 0.21, 2907, 1728, 1528, 1458, 1264; 5-nitroso-8-methyltocol, 405, 340, 0.48, 2915, 1519, 1458, 1261; 7-nitroso-8-methyltocol, 405, 340, 0.79, 2907, 1722, 1522, 1460, 1201; nitroso- ϵ - **tocopherol**, 410, 358, 0.60, 2915, 1732, 1522, 1456, 1272; 5-nitroso-7,8-dimethyltocol, 415, 355, 0.19, 2907, 1522, 1452, 1261; 7-nitroso-5,8-dimethyltocol, 410, 358, 0.42, 2907, 1721, 1522, 1451, 1272. 3-(2-Hydroxyethyl)toluquinol di-Me ether (0.8 g.), 5 g. HBr, and 15 mL AcOH refluxed 6 h., the product diluted with Et2O, and the extract washed and evaporated gave a black oil which was refluxed 3 h. with 2 g. anhydrous K₂CO₃

and 10 mL Me₂CO, extracted with Et2O, washed with N NaOH, the alkaline extract

acidified, and extracted with Et₂O to give 0.25 g. 4-methylcoumaran-5-ol, m. 111-12° (H₂O). 2,5-Dimethylbenzoquinone (3.3 g.) in 100 mL. alc. added during 1.5 h. to 0.56 g. Na in 30 mL. alc. containing 3.6 g. AcCH₂CO₂Et, the solution kept overnight, poured on ice and 10 mL. concentrated HCl, and the tar separated by steam distillation gave 0.25 g. 5-hydroxy-2,4,7-trimethylbenzofuran (V), m. 133-4° (aqueous alc.). V (0.5 g.) in 15 mL. alc. shaken 5 h. with H and 10% Pd-C gave 2,4,7-trimethylcoumaran-5-ol, m. 97-9° (ligroine). 5-(2-Hydroxyethyl)toluquinol di-Me ether (4.5 g.), 25 g. HBr, and 75 mL. AcOH refluxed 6 h., the product diluted with Et₂O, washed, and evaporated gave 2.1 g. 5-(2-bromoethyl)toluquinol (VI), m. 156-7° (C₆H₆). VI (0.8 g.), 3.5 g. anhydrous K₂CO₃, and 25 mL. Me₂CO refluxed 1 h. gave 0.25 g. 6-methylcoumaran-5-ol, m. 135-6° (C₆H₆-ligroine). 2,5-Dimethylquinol (14 g.), 18 g. AcCH₂CO₂Et, and 10 mL. alc. stirred at 0-5° while 30 g. P₂O₅ was added, the temperature raised to 140°, maintained there for 2 h., cooled, ice added, and the mixture extracted with Et₂O gave 1.9 g. 6-hydroxy-2,5,8-trimethylchroman-4-one (VII), m. 280-2° (alc.). VII (1 g.) in 100 mL. alc. hydrogenated with 10% Pd-C gave 2,5,8-trimethylchroman-6-ol. m. 126-8°. Hydrogenation of 6-hydroxy-2,5,7,8-tetramethylchroman-6-ol, m. 144-6° (ligroine). 2,2,5,7,8-Pentamethylchroman-6-ol was obtained, m. 93-4° (aqueous alc.). Reduction of 5-hydroxy-2,4,6,7-tetramethylbenzofuran gave 2,4,6,7-tetramethylcoumaran-5-ol, white needles, m. 133-4° (aqueous alc.). Toluquinol di-Me ether (VIIa), (8 g.), 9.8 g. N-bromosuccinimide, 100 mL. CCl₄, and 100 mg. Bz₂O₂ refluxed 2 h., the mixture filtered, the solid washed, and the combined filtrates evaporated gave 9 g. 2-(bromomethyl)quinol di-Me ether (VIII), m. 75-6° (ligroine). VIII heated with MeOH gave 2-(methoxymethyl)quinol di-Me ether, b₀.07 68°. VIII (8.5 g.) in 40 mL. Et₂O refluxed 1 h. with Mg, the mixture treated with HCHO, treated with 45 mL. 10% H₂SO₄, the Et₂O layer separated, filtered, and steam distilled gave 3.3 g. 1,2-bis(2,5-dimethoxyphenyl)ethane (IX), m. 64-6° (aqueous alc.). In subsequent reactions the oil which separated from the initial reaction was shown to be IX; no variation in the exptl. conditions was found that would prevent the formation of this product. VIIa (9 g.), 11.8 g. 1,3-dichloro-5,5-dimethylhydantoin, 100 mg. Bz₂O₂, and 80 mL. CCl₄ refluxed 0.5 h., the 9 g. of solid collected and rejected, and the filtrates evaporated and crystallized gave 5-chloro-toluquinol di-Me ether (X), prisms, m. 92-3°. VIIa (9 g.), 11.8 g. purified 1,3-dichloro-5,5-dimethylhydantoin, 50 mg. Bz₂O₂, and 80 mL. CCl₄ refluxed 2 h., and the product isolated as before gave 3.4 g. X and 2.9 g. 2-(chloromethyl)-quinol di-Me ether, m. 72°. NaCN (5.1 g.) and 6 mL. H₂O stirred during the 0.5 h. addition of 10.2 g. VIII in 100 mL. dioxane, left 5 h., the mixture cooled, H₂O added, the product extracted with Et₂O, and evaporated gave 2.9 g. 2-(cyanomethyl)quinol di-Me ether (XI), prisms, m. 52-4° (aqueous alc.). XI (4 g.), 1.6 g. NaOH, 2.5 mL. H₂O, and 20 mL. alc. refluxed 24 h. gave 4 g. homogentisic acid di-Me ether (XII), white needles, m. 122-3° (H₂O). XII (1.4 g.) in 50 mL. Et₂O added to 0.6 g. LiAlH₄ in 10 mL. Et₂O, the mixture stirred 1 h., cooled, and decomposed gave 0.80 g. 2-(2-hydroxyethyl)quinol di-Me ether, b₀.3 100°, n₂₃D 1.5378, and 0.13 g. of a higher-boiling fraction, b₀.3 110°. 2-Bromo-quinol di-Me ether (26.4 g.) in 100 mL. Et₂O treated with 3.1 g. Mg, and the reaction completed by heating 1.5 h., the solution cooled to 0°, treated slowly with 17 g. ethylene oxide in 35 mL. Et₂O, the mixture refluxed 1.5 h., decomposed with dilute H₂SO₄, the aqueous layer extracted with Et₂O, the Et₂O washed, evaporated, and the oil steam distilled gave 2.1 g. quinol di-Me ether. The nonvolatile oil gave 10 g. 2-(2-hydroxyethyl)quinol di-Me ether.

(XIII), b0.2 108°, n_{25D} 1.5370; 3,5-dinitrophenylurethane, m. 166-7° (aqueous Me₂CO). XIII (6 g.) in 30 mL Et₂O containing 6 drops C₅H₅N was refluxed, 2.3 mL PBr₃ added during 20 min., the mixture refluxed 1.5 h., cooled, treated with H₂O, the Et₂O separated, washed, the NaOH washings acidified and the oil rejected. Acidification of the NaHCO₃ solution gave 2.3 g. of oil, probably the crude dihydrogen phosphite of the starting material. Evaporation of the original alc. extract gave 4.15 g. 2-(2-bromoethyl)quinol di-Me ether (XIV), b0.1 93-4°, n_{23D} 1.5572; isothiuronium bromide, prisms, m. 115-16°; picrate m. 215-16° (alc.). XIV (3.98 g.) and 2.55 g. EtI in 20 mL Et₂O treated with 0.85 g. Mg, the mixture heated a further 1.5 h., cooled, and 8.7 g. 6,10,14-trimethyl-2-pentadecanone in 15 mL Et₂O added, the mixture refluxed 1.5 h., cooled, the complex decomposed, and the Et₂O exts. gave 3.82 g. putative crude 3,7,11,15-tetramethyl-3-hexadecanol, b0.005 68-70°, n_{19D} 1.5026, and 2.67 g. 1-(2,5-dimethoxyphenyl)-3,7,11,15-tetramethyl-3-hexadecanol (XV), b0.005 170°, n_{20D} 1.4788. XV (300 mg.) refluxed 8 h. with HBr in 6 mL AcOH, the red solution evaporated, and the residual oil taken up in Et₂O gave 270 mg. of brown oil. This oil was chromatographed on Al₂O₃ to give 48 mg. tocol (XVI), b0.005 160°. XVI (1 g.) in 7.8 g. alc. and 2.2 mL 40% HCHO and 0.22 mL saturated KOH kept 72 h. at room temperature, 30 mL iso-Pr ether and 10 mL concentrated HCl added, the mixture refluxed 2 h. with 2 g. Zn powder, and the solution washed, dried, and evaporated to give a yellow oil. The oil was chromatographed in ligroine on Al₂O₃ to give 300 mg. II, b0.005 170°. (±)-α-Tocopherol (1.2 g.) oxidized and distilled gave 0.56 g. neutral fraction as 4-hydroxy-4,8,12,16-tetramethylheptadecanoic lactone (XVII), n_{21D} 1.4600; S-benzylisothiuronium salt m. 117-18°. XVI (3 g.) oxidized in a similar manner and distilled gave a compound whose spectrum was the same as XVII. Synthetic II (80 mg.) and 50 mg. paraformaldehyde in Et₂O saturated with 5 mL HCl, kept 2 h., 0.5 g. more added during 0.5 h., the Et₂O washed, and evaporated gave 71 mg. containing 28.5% β-tocopherol (XVIII) and 26.4% α-tocopherol (XIX). The product was chromatographed on paper impregnated with ZnCO₃, and the XVIII band was removed and nitrosated. The nitroso derivative behaved identically with authentic 7-nitroso-β-tocopherol. The remainder of the product was chloromethylated for a further 3 h. The product (65 mg.) then contained 53.5% XVIII and XIX. It was chromatographed on a column of ZnCO₃-Super-cel to give XIX. 8-Methyltocol (20 mg.) and 50 mg. paraformaldehyde in Et₂O saturated with 5 mL HCl, kept 5 min., and the mixture treated with Zn dust and HCl gave 22% XVIII, 27.7% XIX, and some starting material. No 7,8-dimethyltocol could be detected. 7-Methyltocol (1 mg.) and 0.4 mg. paraformaldehyde in Et₂O kept 0.5 h. with HCl and reduced gave 34% IV, and 48% unchanged material. IV (1 mg.) treated as above gave 36% XIX. I (1 mg.) treated as above gave 18% III. Continuing the reaction for 4 h. did not produce XIX. II (1 mg.) in 0.75 mL alc. and 0.2 mL 40% HCHO left 3 days with 0.02 mL saturated KOH, 10 mL iso-Pr ether added with 5 mL concentrated HCl and 0.5 g. Zn dust, the mixture refluxed 2 h. at 60°, and evaporated gave no identifiable products. I (1 mg.) similarly treated and the product chromatographed gave 21% III. 7-Methyltocol (50 mg.) dissolved in 3 mL alc., 0.3 mL 40% HCHO, and 0.1 g. KOH heated 1 h. at 65° in a sealed tube gave 7.8% IV and 81% unchanged material. 8-Methyltocol (50 mg.) treated as above for 0.5 h. gave after reduction 47.4% 5,8-dimethyltocol, and 40% unchanged material. Specimens of III obtained from wheat bran, palm oil, and unpolished rice (20 ug) together with 20 γ of IV were run side by side for 4 h. by the descending method. III from wheat bran and palm

oil had Rf value of 0.36 while III from rice and IV had Rf of 0.28.

L9 ANSWER 32 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1961:139650 CAPLUS
 DOCUMENT NUMBER: 55:139650
 ORIGINAL REFERENCE NO.: 55:26367d-g
 TITLE: Preparation of vitamin E concentrates by high vacuum distillation
 AUTHOR(S): Martinson, E. N.; Zakharova, M. P.; Alashkevich, M. L.; Khokhlov, I. M.; Shiryaev, A. G.; Kastornykh, M. C.
 SOURCE: Trudy Vsesoyuz. Nauch.-Issledovatel. Vitamin. Inst. (1959), 6, 75-81
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 AB Vitamin E (I) concentrates were obtained on a large scale from vegetable oils, e.g., 23.5 kg. cotton oil (100 mg. % I) was preheated at 120-30°, gradually supplied to the apparatus (description given) and distilled at <175°/1.10-2 mm. to give 253.5 g. concentrate containing 21.6 g. I. The main impurities were the original oil and sterols. Purification was carried out by 2 methods: (1) the solution of concentrate in an organic solvent (EtOH, Me₂CO, or (CH₂Cl)₂) was cooled to 0°, the solidified oil filtered off, the filtrate cooled from -12 to -14°, the sterols filtered off and the solvent removed in atmospheric N. The procedure was repeated to give a fairly pure concentrate of I. (2) The concentrate was treated with aqueous alc. NaOH and 1% pyrogallol, extracted with an organic solvent, and the latter removed in vacuo. Preps. containing 80-90% I were thus obtained. The solns. of I were biol. active.

L9 ANSWER 33 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1957:77562 CAPLUS
 DOCUMENT NUMBER: 51:77562
 ORIGINAL REFERENCE NO.: 51:14014i,14015a-f
 TITLE: Indian lauraceous fats. I
 AUTHOR(S): Narang, S. A.; Puntambekar, S. V.
 CORPORATE SOURCE: Forest Research Inst., Dehra Dun
 SOURCE: J. Indian Chem. Soc. (1957), 34, 135-42
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 AB cf. C.A. 32, 76049. The chemical composition of the mixed fatty acids, including unsaponifiable matter, of 5 lauraceous fats has been studied by the modified method consisting of crystallization of trilaurin of the fats from alc. and of separation and identification of the individual fatty acids in the alc.-soluble portion of the fats in the usual manner. The glyceride composition of the lauraceous fats have been arrived at by employing the two methods of Kartha for their estimation. The physicochemical characteristics of fats of *Litsea chinensis* (I), *L. citrata* (II), *L. lanuginosa* (III), *L. zeylanica* (IV), and *Antinodaphne angustifolia* (V) were determined by the commonly used methods and are recorded in the same order, resp.: color-pale yellow, pale yellow, light brown, pale yellow, pale yellow; m.p.- 39-41°, 40-42°, 39-41°, 35-36°, 42-43°; sp. gr.-0.915/40°, 0.9118/35°, 0.9234/35°, 0.9230/30°, 0.9209/40°; nD₄₀- 1.4451, 1.4403, 1.4452, 1.4451, 1.4403; iodine value- 4.45, 6.6, 9.72, 15.1, 7.1; saponification value- 257.71, 264.25, 260.0, 258.6, 251.85; ester value- 220.5, 196.35, 191.4, 171.66, 225.95; acid value- 37.21, 67.9, 69.5,

86.94, 25.9; Hehner value in % - 91.9, 88.7, 88.1, 82.35, 86.2; acetyl value - 23.8, 17.35, 19.25, 16.74, 20.32; unsapon. matter in % - 1.25, 1.7, 1.3, 1.3, 1.25; and trilaurin crystallized out in % - 73.8, 70.4, 54.0. -, 83.4. The fats, when crystallized from a large volume of alc., were obtained in fine silky needles. On saponification they gave crystalline lauric acid, m. 43-4°. Bromination established the absence of linolenic and linoleic acids. A dibromide of oleic acid was converted into the Na salt by neutralization its alc. solution with dilute aqueous NaOH; addition of aqueous MgSO₄ precipitated the Mg soap of the dibromooleic acid as well as lauric

acids and other saturated fatty acids. The Mg soaps were filtered, washed, dried, and partially dissolved in 50% hot EtOH, leaving behind the Mg dibromooleate, which was again treated 3 to 5 times with 50% hot EtOH to obtain a pure specimen. The free dibromooleic acid was liberated by heating with an excess of dilute H₂SO₄, the upper layer extracted with Et₂O, Et₂O extract washed with H₂O, Et₂O distilled in vacuo, dibromo derivative dried overnight in vacuo, and Br content determined. All the alc. filtrates were combined and concentrated to a small volume, residual Mg soap treated with dilute H₂SO₄, the mixture then heated on a water bath until a clear fatty layer formed on top. This was taken up in Et₂O, washed free of mineral acids, dried with MgSO₄, Et₂O distilled, and fatty acid residue crystallized from dilute Me₂CO and identified as lauric acid, m. 43-4°. The presence of oleic acid was further confirmed by the isolation of dihydroxystearic acid, m. 129-30°. The solid acids were converted into their Me esters by treating with MeOH containing 3.5% HCl, esters fractionated in vacuo, and identified by subjecting them to crystallization from dilute EtOH and dilute Me₂CO. Only lauric

acid was detected. The final composition of the 5 lauraceous fats in percentage of lauric acid, oleic acid, and unsaponifiable matter was: I, 96.27, 2.32, 1.41; II, 96.06, 2.15, 1.79; III, 88.05, 10.41, 1.54; IV, 76.70, 21.90, 1.40; and V, 96.60, 2.10, 1.30. The sterol content of the unsaponifiable matter was extracted by evaporation of the filtrates

from the above operations to dryness, and the residue was found to be mainly waxes, hydrocarbons, and other higher alcs. The acetyl derivative of sterol was prepared, m. 119-20°, and confirmed as sitosterol, which is commonly present in the vegetable oils and fats.

L9 ANSWER 34 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1955:72026 CAPLUS

DOCUMENT NUMBER: 49:72026

ORIGINAL REFERENCE NO.: 49:13670e-g

TITLE: Evaluation of methyl esters, by-product of the extraction of carotene from palm oil

AUTHOR(S): Jorand, J.

SOURCE: Oleagineux (1955), 10, 99-105, 193-6, 269-73

CODEN: OLEAAF; ISSN: 0030-2082

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB In the production of carotene from palm oil by alkaline methanolysis of the oil followed by distillation in a mol. still, the products are pure carotene and chemically pure Me esters of the fatty acids. The yield is about 80% of the treated oil. The esters can be used for the preparation of detergent soaps, metallic soaps, the corresponding alcs., glycerides and monoglycerides, amides, nitriles, amines, esters of alcs. of high mol. weight, hydroxyl esters from methyl oleate,

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acetostearins, and acetooleins. 65 references.

L9 ANSWER 35 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1951:3752 CAPLUS
DOCUMENT NUMBER: 45:3752
ORIGINAL REFERENCE NO.: 45:666b-e
TITLE: Penicillin salts of amino acid **esters** of **sterols**
INVENTOR(S): Coghill, Robert D.; Weston, Arthur W.; MacCorquodale,
Donald W.
PATENT ASSIGNEE(S): Abbott Laboratories
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2519112	-----	19500815	US 1947-729888	19470220
AB Cholesterol 38.5 and ClCH ₂ COCl 11.3 g. in 100 cc. toluene are refluxed 5 hrs. to give cholesteryl chloroacetate (I), m. 161-3°. I 17.1 and Et ₂ NH 5.4 g. in 55 cc. C ₆ H ₆ are refluxed 12 hrs., the mixture washed with H ₂ O, dried over Na ₂ SO ₄ , and gaseous HCl passed in, giving in quant. yield cholesteryl (diethylamino)acetate-HCl, m. 228-30°, m. 237° (decomposition) when recrystd. from MeOH, converted with aqueous NaHCO ₃ to the free base (II), m. 90-1°. Penicillin G Na salt (Na benzylpenicillinate) 4 g. in 20 g. distilled H ₂ O is extracted with a total of 40 cc. Et ₂ O while the pH is adjusted to 2 with 30% H ₃ PO ₄ , the Et ₂ O solution washed with 4 cc. distilled H ₂ O, concentrated to 20 cc. with a stream of N, added slowly to 5 g. II in 20 cc. Et ₂ O, and stirred at room temperature, to give 6.79 g. 1st crop and 1.11 g. 2nd crop of the cholesteryl (diethylamino)acetate salt of penicillin G, m. 104-7°, insol. in H ₂ O, slightly soluble in peanut oil and Et ₂ O, and very soluble in CHCl ₃ . Similarly are prepared the salts of II with penicillin F (2-pentenylpenicillin), penicillin X (p-hydroxybenzylpenicillin), and penicillin K (heptylpenicillin). The use of other sterol and higher alc. esters of amino acids is contemplated. These compds. maintain therapeutic levels of penicillin in the blood for long periods of time and are used in wax-vegetable oil medium for injection, or in tablet form for oral administration.				

L9 ANSWER 36 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1950:8977 CAPLUS
DOCUMENT NUMBER: 44:8977
ORIGINAL REFERENCE NO.: 44:1730g-i
TITLE: Retardation of the development of rancidity in fats and oils
INVENTOR(S): Valteich, Hans W.; Gooding, Chester M.; Neal, Ethel; Neal, Ralph H.
PATENT ASSIGNEE(S): the Best Foods, Inc.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2485640	-----	19491025	US 1948-63624	19481204
AB Development of rancidity and reversion of flavor in glyceridic fats and				

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oils are retarded by the addition of 0.002 to 0.2% by weight of monoalkyl or monoalkylene citrates and sufficient **tocopherol** to raise the **tocopherol** content to 0.002 to 0.2%. The citrate **esters** may be initially dissolved in the oil-soluble hydrophilic coupling agents of U.S. 2,485,631. The **distillate** resulting from the deodorization of **vegetable oils** is used as the source of **tocopherol**. Directions are given for the preparation and use in a **tocopherol-lard** mixture of a mixture of iso-Pr citrates, and of a mixture of oleyl and stearyl citrates; in a **tocopherol-butteroil** mixture of a mixture of monostearyl citrates; and in a **tocopherol-cottonseed-stearin** mixture of a mixture of octyl citrates. Cf. preceding abstrs.

L9 ANSWER 37 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1943:36528 CAPLUS

DOCUMENT NUMBER: 37:36528

ORIGINAL REFERENCE NO.: 37:5831a-d

TITLE: Purification or concentration of **tocopherol**

INVENTOR(S): Baxter, J. G.

PATENT ASSIGNEE(S): Distillation Products, Inc.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2317353	-----	19430427	US 1940-355088	19400831

AB A relatively purified concentrate of **tocopherol** is prepared by a process which involves subjecting a sludge scum, or like by-product derived from the carrier gas treatment of **tocopherol**-containing **vegetable oils**, to high-vacuum, unobstructed path **distillation**, separating a fraction containing an increased amount of **tocopherol** and relatively large amts. of free fatty acids, adding to this fraction approx. 2 vols. of MeOH and a small amount of H₂SO₄, cooling to about 2° to precipitate **sterols**, filtering out the precipitated **sterols**, heating the filtrate for about an hr. to 65-80°, **distilling** off excess MeOH, washing the residue with water and then subjecting it to high-vacuum **distillation** to sep. 2 fractions, the first containing methyl **esters** of impurities and the second containing **tocopherol** in concentrated form. Other acid catalysts, and other **alcs.** containing less than 8 C atoms also may be used and the treatment may be effected in an inert gas, and with conjoint use of a reducing agent, such as Zn dust.

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ACCESSION NUMBER: 1941:53186 CAPLUS

DOCUMENT NUMBER: 35:53186

ORIGINAL REFERENCE NO.: 35:8215g-i

TITLE: Concentrate of naturally occurring vitamin E and antioxidant

PATENT ASSIGNEE(S): General Mills Inc.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 531226	-----	19401231	GB 1939-20568	19390714

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AB The **vegetable oil** such as wheat-germ oil is **esterified** in the presence of HCl as a catalyst, with a monohydric alc. selected from the group MeOH, EtOH and PrOH. The excess alc. is **distilled** off. The crude C₃H₅(OH)₃ and **sterols** are separated from the crude **esters** resulting from the **esterification**. The **esters** are then **distd** . in vacuo, approx. 90% to 95% **distilling** over between 131° to 168° at below 1 mm. pressure.

L9 ANSWER 39 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1938:49630 CAPLUS

DOCUMENT NUMBER: 32:49630

ORIGINAL REFERENCE NO.: 32:6911e-h

TITLE: Vacuum **distillation**

PATENT ASSIGNEE(S): Eastman Kodak Co.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 482881	-----	19380406	GB 1936-18759	19360706

AB Organic substances containing, e. g., vitamins, present in only very small proportions are **distilled** by high-vacuum, short-path **distn** . after admixt. with a synthetic mixture compounded so as to give a constant or known amount of **distillate** for each increase in temperature. The synthetic mixture may be obtained by blending a number of fractions in a ratio other than that in which they are obtained by **distillation**. The mixture may contain a number of glycerides, which are blended and reblended until the final product yields an equal volume of **distillate** for each equal increment of uniformly increasing temperature Brit. 482,882, Apr. 6, 1938. A high-vacuum **distillation** process comprises forming a body of vapors of a substance having a lower vapor pressure than the **distillate**, introducing the mixture to be **distilled** into the hot vapors and condensing the **distillate**. Materials that may be used to form the vapors comprise hydrocarbons, **alcs.**, **esters**, trimyristin, trilaurin, triolein and diglycerol tetrapropionate; substances that may be **distilled** comprise animal and **vegetable oils**, e. g., cod-liver, halibut, tuna, salmon, sardine, menhaden, dog-fish, herring and **sterols**, hormones, **sterol glucosides** of the digitalis type and unsatd. glycerides. Apparatus is described. Brit. 482,883, Apr. 6, 1938. A high-vacuum, short-path **distillation** process for relatively nonvolatile organic compds., e. g., animal and **vegetable oils**, hormones, **sterols**, enzymes, etc., comprises disposing the **distilland** on a **distilling** surface in a thinner layer than is possible by gravity, e. g., by centrifugal force. Apparatus is described.

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